http://ipm.osu.edu/fruit/index.html

THE OHIO STATE UNIVERSITY Newsletter Extension

Fruit ICM News

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Calendar

November 26: Ohio Fruit Growers Society Board Committee Meetings at Dutch Heritage in Bellville; Research Committee - 10 am; Extension Education Committee - 1 pm

November 26: Ohio Apple Marketing Program Committee Meeting, 4 pm at Dutch Heritage in Bellville

December 12: Ohio Fruit Growers Society/Ohio Vegetable & Potato Growers Association Policy Development Meeting, noon at Dutch Heritage in Bellville

Jan. 15-17, 2003: Ohio Fruit & Vegetable Growers Congress & Ohio Roadside Marketing Conference, Toledo SeaGate Convention Centre and Radisson Hotel. Contact Jennifer Hungerford at 614-249-2424 for more information.

Jan. 27-29, 2003: Indiana Horticultural Congress; Adams Mark Hotel in Indianapolis.

Feb. 7-8, 2003: North American Bramble Growers' Association will meet in Leesburg Virginia. The meeting will be held at the Holiday Inn at the Historic Carradoc Hall. Contact Jason Murray, Commercial Horticulture Agent, for further information, at jamurray@vt.edu or 703-737-8978. You can view the program at http://www.ento.vt.edu/Fruitfiles/NABGAProgram03.pdf

February 9-11, 2003: Ohio Grape-Wine Short Course at Wyndham Dublin Hotel in Dublin. For

registration information and other details call 800-227-6972 or go online to http://www.ohiowines.org.

The Ohio Peach Industry: A History to 2003

Source: Richard C. Funt, Department of Horticulture & Crop Science

The Ohio peach industry could be described as exciting, resilient, and profitable for many reasons. Since the 1850's, growers have enjoyed good soils, sites, cultivars, and markets. During the Golden Railway Age (1870 to 1945), rail transportation created a market for Ohio fruit. During World War II, more than 1.5 million soldiers stopped in Ohio before moving to their next designation. Millions of peach trees existed from 1920 to 1950 and produced nearly a million bushels per year. Growers in southern Ohio would pick and pack peaches and they would be shipped by rail to the Cleveland market.

Changes in transportation from 1950 to 1980 brought homes, highways, and recreation to the best sites (Lake Erie) in Ohio. Acreage decreased, but the number of farm retail markets increased.

New chemicals, cultivars, and irrigation systems and increased fruit quality made an impact. Production per tree increased from less than one bushel per tree in 1950, to two bushels per tree in 1987. Several harsh winters in the 1980's, and particularly 1994, brought a loss of trees and no production in some years. However, growers were spurred on by customers who wanted a fresh, juicy, good tasting peach for fresh eating or canning. In years of low production, peaches were imported from Michigan, Pennsylvania, and Virginia.

The Redhaven cultivar has been the mainstay for the past 30 years. In 1987, Redhaven was grown in 85% of the peach orchards and was 43% of all trees. In 1993 Redhaven accounted for about 31 percent of bearing trees and 20 percent of newly planted trees. Redhaven, Harmony, Cresthaven, and Redskin have been the top four cultivars since 1993.

By 1997, commercial peach and nectarine acreage in Ohio was 1,459, and 27 acres, respectively, with fewer than 190,000 peach and 1,500 nectarine trees. Three districts accounted for 77 percent of the acreage. These were North Central (Ottawa, Sandusky, Huron, Lorain, and Erie Counties), Northeast (Lake, Columbiana, Stark, and Ashtabula Counties), and Central (Licking, Knox, and Fairfield Counties). The North Central region accounts for 40 percent of acreage. Currently growers are removing apple trees, due to low prices received for less desirable cultivars, and planting to peach, because of renewed demand, increasing prices for fresh market peaches, and increasing number of retail farm markets. The average number of acres of peaches per orchard is about 5.0, but the North Central District is near 7.0 and the East District about 7.5 acres. More trees have been planted than trees removed in the last few years. There are about 500 farms that have peach or nectarine trees.

Fresh market peaches are sold at the farm gate or farm retail markets. For more than 40 years, Ohio has had 12 major cities with 50,000 or more people connected by a major highway system. Also, a large number of travelers from out-of-state are visiting recreational sites, particularly near Lake Erie (the North Coast), thus creating a demand. Peaches have been imported from eastern states and Michigan for direct farm sales, particularly where local peaches are not produced. Since 1997, average fresh peach prices have increased from $ 0.40 to $ 0.49/pound, while average US prices have ranged from $ 0.18 to 0.21 per pound.

While demand and price entice growers to plant more peach trees, historical data have shown an average

of one or two years, out of five, with severely reduced peach production. Growers who plant on good sites and use consistently good cultural practices and replant every 10 to 12 years have survived. Some growers in the past 20 years have had good crops and removed trees that were 20 years of age.

Ohio peach growers are committed to fresh locally grown peaches for their retail customers. They combine their crops with sweet corn in the summer and early apples in the fall to keep the customers coming back for more. Peaches provide a good summer cash flow for Ohio fruit growers. Challenges of cold winters and late spring frost remain now and in the near future.

Sources:
1987 Ohio Fruit Tree and Vineyard Survey, Ohio Agric. Statistics Service
1993 Ohio Orchard and Vineyard Survey, Ohio Agric. Statistics Service
1997 Census of Agriculture - County Data, USDA, Nat. Agric. Statistics Service
2002 Peach Statistical Yearbook, National Peach Council

Berry Information on the Web

Source: Massachusetts Berry Notes Nov. 2002, Vol. 14, No. 18,
http://www.umass.edu/fruitadvisor/berrynotes/index.html

Winter is the time to take stock of the year that has just passed and plan for the year to come. One of the important jobs during this time is evaluating the performance of varieties that are grown and selecting varieties for new plantings. It seems like a good time to remind people of the resource available at Cornell University for searching out nurseries that carry specific varieties of small fruits that you may be looking for. On the internet, go to http://www.hort.cornell.edu/department/faculty/pritts/sfruit/index.html. This site will allow you to look up specific varieties of berry crops and then locate the nurseries that carry that variety.

While I'm at it, I'll also recommend the Cornell Berry Crops website, which has very good information, including the online version of the *New York Berry News*, a very informative newsletter. It can be found at http://www.nysaes.cornell.edu/pp/extension/tfabp/index.html.

Reducing Weeds in Black or White Plastic in Eastern Strawberry Production 2002 Report

Source: Richard C. Funt, Department of Horticulture and Crop Science, Ohio State University

Introduction:

Weeds are the number one pest of the Ohio strawberry industry. Growers who use the matted row system can spend in excess of two thousand dollars per acre for fumigation, hand weed control and/or chemical herbicides over two to three years to reduce the many different species of weeds (Funt et al., 1997). On Ohio farms, the matted row system is used and the soil is not fumigated as a standard practice. However, the combination of matted row culture and un-fumigated soil presents the greatest problem in weed control (Himelrick, 1991).

New systems of strawberry culture are being tested. One system utilizes plastic, which can reduce weeds. It may also be beneficial in early ripening of fruit and rapid establishment of strawberry plants in a late summer planting. Himelrick, in Virginia, found mulch surface temperatures of clear, black, and white plastic were 17, 19, and 15C higher than for bare soil, respectively (Himelrick, 1981). He also found that black plastic increased total fruit weight. New systems need to be compared to current matted row systems for costs/benefits to the grower and to the environment. For example, plastic needs to be removed from the field and disposed of in an appropriate manner. In this study, an irrigated raised bed was tested without plastic (control) and with black and white plastic installed in an August plug planting (2001) and harvested the following two years (2002-2003).

Objectives:

The objective of this experiment was to determine the amount of weed control between no plastic and plastic covered raised beds, yield, and a comparison of costs among the treatments.

Methods:

Strawberry plug plants, Allstar cultivar, were planted in a staggered two row system, 12 inches apart in the row and between rows on August 8, 2001. The control was a raised bed with trickle irrigation. The treatments had black plastic (embossed - 1.0 mil., 5 ft. width) or white plastic (1.3 mil., 5 ft. width). The raised bed with trickle tubes and plastic covering was constructed with a bedder after the field was plowed and rototilled (twice).

A water wheel planter was used to create a hole in the plastic to apply a small amount of water. All plants were planted by hand. No herbicides were applied to the plastic treatments. Grass was planted between rows to reduce weeds and erosion. Straw was applied as a winter cover and removed on May 3, 2002.

Select 2 EC was applied for spring grass control where grass seed had entered the plastic near the plant. In the control, hand weeding was completed once in May, July, and October, 2002. Herbicides 2,4-D, Dacthal, and Devrinol plus Sinbar were used after harvest in July, August, and October, respectively. A cost comparison (partial budget) between the control and plastic treatments was developed to reflect the labor and products used in this study for determining a cost/benefit analysis.

Berries were harvested and total yield, percent ripe/harvest date, and weight per berry (berry size) were determined. There were three treatments and three replications in a completely randomized block design. A statistical analysis appropriate for this field study was used (SAS, 1990). All berries received a herbicide spray of Gramoxone at renovation to narrow the row width (burn runners), and manage weed control for harvest in 2003.

Results:

There were very few weeds in the plastic treatments. These consisted, if any, of grasses and bindweed. In the control, several grass species and broadleaf weeds as bindweed, Canada thistle, and plantain were recorded before harvest, at renovation, and in late summer. Hand weeding was sufficient for maintaining a weed-free planting (80 to 90% of the area having no weeds). Chemical weed control was only temporary or unable to control weeds.

There was no significant yield differences among treatments at any harvest or for all harvests (Table 1). Treatments achieved about 40% of a normal expected harvest. Plastic did not statistically increase the

number of berries to ripen early (June 13) when compared to the control (Table 2). There was no differences between black or white plastic for yield, percent ripe, or berry size. Plastic appeared to reduce berry size in the June 21st harvest as compared to the control (Table 3).

The cost to control weeds among the treatments in shown in Table 4. Specific costs per item are shown in Table 5. These costs are based on early 2002 prices for each item as used by the grower-cooperator. Black and white plastic costs were 54% and 71%, respectively, of the no-plastic system. Hand labor, as estimated per acre to that used in this study, was 68% of the total cost in the no-plastic treatment.

Discussion:

Plasticulture has been tested by Ohio growers to reduce weed control costs, to increase yields over matted row systems, and to have earlier ripening of berries. In this study, weed control was considered to be good to excellent with plastic, and poor in the no-plastic control. There were no differences among treatments for yield or for earlier ripening.

Yields for this cultivar at this location were disappointing for a double row system. An early October drop in temperature, deer damage, and a low bed could have been the reason for this.

It is believed that the planting date was ideal and plant size was good. Weeds did not appear to influence yields in the control. There may be an influence on yield by weeds in the 2003 results.

The white plastic was disappointing and started to break up after 4 to 6 months, and is not recommended, based on performance and cost. The real influence of white plastic could not be demonstrated in this test.

If growers have similar costs as estimated in this report, then plastic has one distinct advantage for weed control. However, removal and disposal are to be considered in the total expense of the system.

Conclusions:

Black or white plastic yields were not different from the no-plastic control. Few weeds developed in the plastic treatments. Estimated costs for black or white plastic were 54% and 71%, respectively, of the no-plastic system. Labor for hand weeding was the highest cost for the no-plastic system. Differences in weed control among treatments may occur in the second harvest year of 2003. The second harvest year may provide different yield responses than the first year.

Acknowledgement:

The financial support of the Ohio IPM program headed by Dr. Joe Kovach is gratefully acknowledged.

Table 1. Yield comparison of Allstar strawberries on no-plastic, black or white plastic, raised bed, double row system, near Bellville, Ohio, 2002.

Plastic Type[z]	Total Yield - Harvest date (gms)			All Harvest[y]	Per ft. Of Row (gms)	
	6/13	6/21	6/26		Total	Avg/harvest
Control - no plastic	305	1825	382	2512	179.4	59.8
Black plastic	460	1267	886	2613	186.7	62.2

White plastic	360	1222	759	2341	167.2	55.7

z There were no statistical differences among plots for any treatment or harvest date.
y Grams per 14 ft. of row.

Table 2. Percentage of total yield of Allstar strawberries by harvest date on no plastic, black or white plastic, double row system, raised bed near Bellville, Ohio, 2002.

Plastic Type[z]	% Ripe - Harvest date (gms)		
	6/13	6/21	6/26
Control - no plastic	12.8	71.6	15.5
Black plastic	14.9	49.5	35.6
White plastic	18.0	49.0	33.0

z There were no statistical differences among plots for any treatment or harvest date.

Table 3. Average Allstar berry size for no plastic, black or white plastic, double row system, raised bed near Bellville, Ohio, 2002.

Plastic Type[z]	Berry size (gm) - harvest date			All Harvest
	6/13	6/21	6/26	Avg. Berry Wt.
Control - no plastic	13.2	14.9a	6.3	11.5
Black plastic	12.0	11.1b	10.4	11.1
White plastic	13.2	11.4b	9.0	11.3

z Means followed by different letter are significantly different at the .05 level.

Table 4. Estimated partial budget for a cost comparison of no plastic, black or white plastic for weed control for eastern strawberry production on raised beds and trickle irrigation, Ohio, 2002.

Item[1]	Cost/acre[2]		
	No plastic	Black plastic	White plastic
Plastic	$ 0.00	$357.00	$548.44
Bedder	16.00	40.00	40.00
Bedder labor	0.00	18.60	18.60
Water wheel	0.00	17.34	17.34
Weed control (see Table 5)			
1. Hand labor (3x)	798.76	11.18	11.18
2. Chemical	272.94	0.00	0.00
3. Tractor, Sprayer, Operator[3]	74.82	0.00	0.00
Disposal, plus landfill use	0.00	190.00	190.00
Sub-total	1162.52	634.12	825.56
Manager[4]	116.25	63.41	82.56

Total	$1278.77	$697.53	$908.12

1 Based on a 25 acre farm having 20 acres of crops that utilize equipment for fruit and vegetable production.
2 Items as trickle irrigation, hand planting, harvesting, pest control, etc., are the same for each treatment.

3 Three applications at 20 minutes each/A; including fill up and driving time.
4 10% of all labor costs are allocated to the manager for their time to arrange each job.

Table 5. Cost of items used in plasticulture and non-plastic raised bed systems, 2002.

1. Plastic: Black - embossed 5' wide x 2400' 1 mil = $65.20/roll	$ 65.50
White - white on black 5' wide x 2400' 1.3 mil = $116.25/ roll	116.25
Shipping - 2 rolls	72.00
3.75 rolls/A @$65.20 + $36.00 shipping/roll - Black Per acre (9,000 linear ft)	363.00
3.75 rolls/A @$116.25 + $36.00 shipping/roll - White Per acre (9,000 linear ft)	554.44
2. Plants: Single row - 8720 @ $0.18 each	1569.60
Double row - 17440 @ $0.18 each	3139.20
3. Equipment, materials new cost per unit	
A. Trickle - 2 Hp Pump, Electric	650.00
2" main - 500 ft @ $0.25/ft	125.00
B. Trickle - Bi-wall tube - $0.03/ft x 9,000 ft	270.00
C. Water wheel - 2 row	1300.00
D. Bedder -with plastic layer	3000.00
4. Herbicide: Devrinol - 3 lbs @ $8.84	26.52
Dacthal - 12 lbs/A @ $14.67	176.01
Sinbar - 1 lb/acre @ $9.82	9.82
Select 2 FC - 8 oz + oil 16 oz	11.34
2, 4-D Amine - 1.5 qt @ $32.85/qt	49.27
Tractor, sprayer, labor/acre ($29.76+$45.15+$26.00)	201.83
5. Pesticides (number of applications) Thiodan 50 WP - 2 lbs/A (1) - $6.57/lb	13.14
Topsin -M 1lb/A (5) - $17.40/lb	87.00
Captec 4L - 2 qt (5) @$6.28/qt	51.52
Guthion WSP - 1 lb (1) @$9.95/lb	9.93
Tractor, sprayer, labor/A ($29.76+$45.15+$26.00)	201.83
6. Nutrients and other supplies: Miller's 20-20-20 foliar spray (5) 32 total pounds	22.40
Straw - 2 Ton, 100 bales/A @ $2.00 each	200.00
Tractor, wagon, spreader/A ($29.76+$14.00+$28.98)	72.74
Labor with fringe: Hand labor = $11.28/hr; Skilled labor = $26.00/hr	

Linear ft/A - 40 rows (60 inches apart) x 218 ft = 8720 ft
Linear ft/A - 31 rows (78 inches apart) x 218 ft = 6758 ft

Strawberry and Potassium

Source: Christoph Kessel, Horticulture Crop Nutrition, OMAFRA, Guelph, Ontario

One question asked this past season was: "Why does my leaf analysis show a potassium deficiency but the soil test shows adequate soil potassium?"

It can be difficult to relate soil and tissue analysis results to each other. It is important to remember that leaf analysis is a snapshot of what is in the leaf at the time of sampling. Many soil and environmental factors can affect nutrient concentrations. There are two points to consider when reviewing your analyses. First of all, soil and environmental conditions affect potassium uptake. Secondly, the potassium concentrations in the leaves and in the plant will change over the season.

Potassium moves to the plant root by diffusion. This describes the movement of potassium in soil solution (high potassium concentration) to the plant root (a lower concentration). Potassium diffusion and uptake can be hampered by low soil temperature, damaged roots, poor soil aeration, low soil moisture, and low clay and organic matter content.

Potassium concentration in the leaves and plant changes over the season. The optimum range for strawberry leaf analysis is 1.5-2.5% (OMAFRA Publication 360, Fruit Production Recommendations, 2000-2001). This range is valid for fruiting plants sampled around July 1. Results from samples taken earlier in the season will be difficult to compare to this range.

Several studies have regularly analyzed strawberry leaf nutrient concentrations during the growing season. They have shown that potassium concentrations are higher prior to flowering and lower after harvest. For example, one study reported a 1.26% potassium at the beginning of July. By the middle of August, the concentration dropped to 0.93%. In a study from British Columbia, 2.45% potassium was reported in mid May, 1.61% in July and 1.49% in September. Increasing soil potassium levels through soil applied potassium fertilizers increased foliar potassium concentrations. However, the concentrations were still observed to decrease between flowering and post-harvest. Although monitoring foliar potassium seems to indicate a declining potassium concentration, the overall plant potassium concentration increases during the season.

To manage your soil potassium, complete a soil test and provide ideal growing conditions to maintain root health and maximize root uptake of potassium. More information on strawberry fertility is available from OMAFRA Publication 360, Fruit Production Recommendations ($10.00 plus GST) and Publication 611, Soil Fertility Handbook ($35.00 plus GST). To obtain a copy of either publication, please call 1-888-466-2372, follow the telephone menu to "Publications", contact the OMAFRA website http://www.gov.on.ca/omafra, or e-mail products@omaf.gov.on.ca.

(***Original Source**: All Ontario Berry Grower, Volume #00.11 November 2000*)

Fall Activities for Blueberries

Source: Gary Pavlis, Rutgers University, via Massachusetts Berry Notes, Nov. 2002, Vol. 14, No. 18

Roguing: Roguing of diseased bushes should be progressing. This is important in all varieties, but

should be done with extra care where blocks of Bluetta or Weymouth are located close to Blueray or Bluecrop. In the Pemberton area, where there is still an appreciable acreage of Rancocas, varieties adjoining this old variety should be carefully inspected. In such situations there seems to be a more rapid spread of stunt disease. The Rancocas is very resistant to this virus disease but it is susceptible and may be a source of the disease without showing symptoms vividly. After many years of harboring the disease, some Rancocas bushes are now clearly exhibiting stunt symptoms. All old plantings of Rancocas should be carefully rogued. Remember to spray diseased bushes before removing them. It is necessary to kill the leafhoppers and it is more efficient, more economical, and wise from the standpoint of conservation of beneficial insects, to spray individual bushes rather than entire fields.

Disease Identification: A few growers have asked me to provide them with information so that they are more able to identify the typical blueberry diseases such as Alternaria, anthracnose, Phomopsis, botrytis, and mummy berry. I should just explain that the ability to positively identify a disease comes largely from experience. I once spent a few days looking at thousands of plants and tagging those with stunt while I was working on my masters degree in Arkansas. This experience was very early in my career and I accompanied Dr. Jim Moore from Arkansas and Dr. Al Stretch, USDA Pathologist. As a result of this experience, I have never forgotten what stunt looks like. This experience was invaluable, and a grower who is not sure about disease ID should invite someone to his field who can spend some time and help him with identifications. This ability is critical in the choice of cultural and pesticide decisions.

Another aid to disease ID are extension publications. The *Highbush Blueberry Production Guide* has photos and descriptions that will be of great value in disease ID. Also, Michigan State produces one called *Blueberry Diseases in Michigan*, Extension Bulletin E-1731. Write Michigan Cooperative Extension, Michigan State University, East Lansing, MI 48824. There is also the new *Compendium of Blueberry and Cranberry Diseases*. This is an excellent resource for growers and researchers alike. This manual is produced by the American Phytopathological Society, 3340 Pilot Knob Road, St. Paul, MN 55121-2097. It should be realized that there are many times where disease ID is impossible without the help of their cooperative extension office in these cases. To access a web site for disease ID visit http://www.fvs.cornell.edu; and select "Resources" then select "Berry Diagnostic Tool."

Nut Sedge: I visited a farm infested with nut sedge with our Weed Specialist last week and picked up a few things that maybe useful to growers fighting this weed. You may recall that I have recommended Sinbar for the control of this weed. Actually, I stated that Sinbar will do a good job if applied at the maximum rate, but only on high organic matter soils. Applications are made as late as possible because nut sedge germinates about May 1. A combination of Solicam and Sinbar will result in early suppression by Sinbar until July 4th, and then Solicam will kick in. The grower I visited last week did all this and still has a major problem. Dr. Brad Majek, our weed specialist, pointed out that Sinbar is very soluble and will not work when a trickle irrigation system is present, i.e. trickle + nut sedge = Roundup in early August. In addition, growers who have trickle systems would get better weed control from their herbicides if they would limit water applications in early spring when herbicides are first applied and are present. It actually might be a good idea to place the trickle tube at a 6 inch depth since herbicides work primarily in the top 6 inches of soil. Doing this may greatly decrease weed problems with trickle irrigation.

(***Original Source**: The Blueberry Bulletin, Vol. 18, No. 21, Oct. 30, 2002*)

Comparing Costs of Lime Materials

Source: Hans Walter-Peterson, Cornell University, via Massachusetts Berry Notes Nov. 2002, Vol. 14, No. 18

Last week I put out some information on the Effective Neutralizing Value (ENV) of lime and how to use that when determining how much material to actually apply to your vineyard. This week I want to take this a step further. When comparing costs of different materials, use the material's ENV and the cost per ton of the material in the following formula:

Cost per ton of lime / ENV (as a decimal) = Cost on 100 ENV basis

For example, Vendor A is selling a dolomitic limestone product with an ENV of 90 for $30/ton. Vendor B is selling another dolomitic lime with an ENV of 75 for $25/ton. To determine the most cost-effective option, compare the cost of each product on the same basis, that being 100 ENV.

In this case:
Vendor A: $30 / 0.95 = $31.58/ton (100 ENV basis)
Vendor B: $25 / 0.75 = $33.33/ton (100 ENV basis)

While the cost for Vendor B's product may appear cheaper on the surface, it will cost you more to achieve the same amount of acid neutralization as Vendor A's product.

(***Source**: Lake Erie Regional Grape Program Crop Update, October 29, 2002*)

Magnesium/Calcium Content of Lime Materials

Source: Hans Walter-Peterson, Cornell University, via Massachusetts Berry Notes Nov. 2002, Vol. 14, No. 18

In addition to neutralizing acidity in the soil, lime is an inexpensive way to add magnesium and/or calcium to the soil. To determine how much of each of these elements you are adding by liming your vineyard, find the percentages of calcium (Ca), calcium oxide (CaO), magnesium (Mg), and magnesium oxide (MgO) that are in the material you are using (it is New York state law that these analyses be available for liming materials).

Let's say the lime material you are planning on using contains:

Calcium: 20%
Magnesium: 13%
Calcium oxide: 32%
Magnesium oxide: 18%

To determine the amount of calcium that will be provided by calcium oxide, multiply the percentage by 0.71. To determine the magnesium from magnesium oxide, multiply by 0.60.

In this example, then: Calcium oxide: 32% x 0.71 = 22.7%+ 20% (pure calcium) = 42.7% Ca

Magnesium oxide: 18% x 0.60 = 10.8% + 13% (pure magnesium) = 23.8% Mg

So for every ton of this material that is spread, you will be adding about 854 lbs (2000 lbs x 0.427) of calcium and about 476 lbs (2000 lbs x 0.238) of magnesium.

(***Original Source**: Lake Erie Regional Grape Program Crop Update, October 29, 2002*)

Terminal Market Wholesale Fruit Prices November 13, 2001

The intent of listing terminal market prices is to provide information available in the public domain. It is not intended for price setting, only to assist growers in evaluating the value of their crops. Producers need to remember that the prices listed are gross, and consideration must be given to marketing costs, including commission, handling charge, gate fees, and possible lumper fees.

Source: Chicago http://www.ams.usda.gov/mnreports/HX_FV010.txt
Detroit http://www.ams.usda.gov/mnreports/DU_FV010.txt
Pittsburgh http://www.ams.usda.gov/mnreports/PS_FV010.txt

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	Chicago	Detroit	Pittsburgh
Apples, ctns trypk, U.S. ExFcy			
McIntosh Fancy Cortland	**WI** 64s, 72s, 80s 25-26 **WI** 72s 16.00		
Apples, ctns trypk, Comb U.S. ExFcy-U.S. Fancy G. Delicious Red Delicious		:	**WV** 125s 14.50 **WV** 125s 14.00
Apples, ctns celpk, U.S. ExFcy			
Empire		**NY** 100s 25-26.00 120s 20-21.00	
McIntosh	**NY** 80s 26.00	**NY** 100s 25-26.00 120s 20-21.00	
U.S. Fancy McIntosh	**NY** 96s 26.00 100s 16.50-17.00		**NY** 80s 18.50-20.00 100s 18.50 120s 15.50
Apples, ctns celpk, Comb U.S.ExFcy-U.S. Fancy McIntosh		**MI** 96s 23.50-24.00	
Apples, cartons, 12 3-lb filmbags U.S. ExFcy Empire Golden Delicious Jonamac Jonathan		**MI** 2½" min 12-13.50 **MI** 2½" min 12-15.50 **MI** 2½" min 14-14.50 **MI** 2½"min 16-16.50 **MI** 2½" min 12-15.00	

Red Delicious Red Rome		**MI** 2½" min 13.50-14.00	
Apples, cartons, 12 3-lb filmbags			
U.S. Fancy - Empire		**MI** 2½" min 12.00	**WV** 2½" min 12.50
Gala	**MI** 2½" up 16-16.50 2¼" min 15.00	**MI** 2½" up 15.75-16.25 **MI** 2¼" min 12.25-12.75	
Golden Delicious	**MI** 2½" up 15.00 **MI** 2¼" min 12.50	**MI** 2½" min 12.00 2¼" min 11.25-11.75	**WV** 2¼" min 12.50
Jonathan	**IL** 2½" min 15-16.00	**MI** 2¼" min 11.25-11.75	
McIntosh	**MI** 2¼ min 15.00	**MI** 2½" min 12.00 2¼" min 12.25-12.75	**NY** 2½" min 12.50
Red Delicious	**IL** 2¼" up 15-15.50 **MI** 2 ¼" min 12.50	**MI** 2½" min 12.00 2 ¼" min 11.25-11.75	**WV** 2¼" min 12.50
Red Rome			**WV** 2¼" min 12.50
Apples, bu cartons, loose	No Grade Marks	U.S. Fancy	U.S. Extra Fancy
Cortland			**PA** 3" min 12.50-13.00
Empire			No Grade, no size marks **WV** Empire12.50
Gala	**MI** 2½"min 16.00 2¼" min 13.00		
Golden Delicious	**MI** 2¼" min 12.00	**MI** 2¾" up 12-15.00 2½" up 12.00	No Grade, no size marks **WV** Golden Delic. 12.50
Jonathan	**IL** 2¼" up 14.00		
Red Delicious	**MI** 2½" up 15.00 2¼" up 12.00	**MI** 2¾" up 12-15.00 2½" up 12.00	No Grade, no size marks **WV** Red Delic.12.50
Apples, bins loose Empire, Golden Delicious Red Delicious	:	:	 **WV** $190 **WV** $190

The Ohio Fruit ICM News is edited by:

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